RECREATION APPENDIX

INTRODUCTION

Recreation area management plans and recreation project plans will be prepared for facility development in special recreation management areas and extensive recreation management areas. It will be a policy to charge a fee for overnight camping at developed recreation sites that meet or exceed the Land and Water Conservation Fund standards. A day use fee may also be charged, providing the facilities warrant a charge. An example of this would be a fee for use of boat launch facilities.

Cherry Creek Dam

Four potential dam sites were considered on the Cherry Creek drainage near the confluence of Cherry Creek and the Yellowstone River. The dam site used in this document is the most feasible. Previous exploration geology confirms this premise. The site offers the best options for an auxiliary spillway, requires the shortest embankment, and is the least expensive of the four considered sites. A reservoir at this site appears to provide the best combination of surface area, pool depth and accessible beaches while not impacting existing roads.

Proposed for this site is a concrete chute service spillway with a capacity of 6,400 cubic feet-per-second (the flow produced from a 100-year storm). A grass-lined auxiliary spillway, designed to discharge 3,500 cubic feet-per-second, is cut into the right abutment of the dam (looking downstream). The capacity of both spillways total 10,000 cubic feet-per-second (flow produced by a 500-year storm). The auxiliary spillway design includes a 100-foot long concrete control crest set at the same elevation as the service spillway. An earthen fuse plug constructed over the concrete sill would wash away if the reservoir were to rise above the design elevation of the service spillway. The auxiliary spillway channel is approximately 1,800 feet long, with some excavation as deep as 30 feet.

The pumping station will be located on the river's north bank (T. 12 N., R., 51 E., sec. 10, SE 1/4), approximately 300 feet east of the Yellowstone River bridge. Water would be pumped through a buried pipeline approximately 2 miles long to the reservoir. The pumping station and pipeline are sized for average reservoir conditions, and for maintaining water surface not lower than 10 feet below the spillway crest elevation. Pumping would begin when the water surface drops to 5 feet below the spillway crest. Fluctuations greater than 10 feet are to be expected in the early years of operation because initially the storage capacity, evaporation, and seepage from the reservoir are greater than the average conditions. As the reservoir operations are refined to meet the objectives, the capacity of the pumping station and pipeline can be reexamined.

40-FOOT POOL DEPTH

The dam would be an earth-filled structure. Based on preliminary designs, the dam would be 2,600 feet long, with a crest width of 34 feet. A dam designed to provide a maximum pool depth of 40 feet requires a maximum height of 50 feet, providing 10 feet of flood surcharge and freeboard above the spillway crest. A dam embankment 50 feet high needs a bottom width of 235 feet. Soil cement would be used for erosion protection on the upstream side of the structure because of the unavailability of riprap. It may be necessary to excavate into the left abutment bedrock for a short cutoff trench. When the reservoir is full, the trench prevents seepage through the terrace deposit at the end of the structure. The dam must comply with the Montana State codes design standards for dam safety.

50-FOOT POOL DEPTH

The dam would be an earth-filled structure. Based on preliminary designs the dam would be 3,000 feet long with a crest width of 24 feet. A dam designed to provide a maximum pool depth of 50 feet requires a maximum height of 60 feet, providing 10 feet of flood surcharge and freeboard above the spillway crest. A dam embankment 60 feet high would have a bottom width of 263 feet. Soil cement would be used for erosion protection on the upstream side of the structure because of the unavailability of the riprap.

It may be necessary to excavate into the left abutment bedrock for a short cutoff trench. When the reservoir is full, the trench prevents seepage through the terrace deposit at the end of the structure. The dam must comply with the Montana State codes design standards for dam safety.